



Memorandum

*To: Diane Salkie, EPA Region 2
Elizabeth Franklin, USACE*

From: Alex Warzinski, CDM Smith

Date: July 19, 2019

*Subject: Summary of Oversight of Equipment Servicing
July 16–17, 2019
Lower Passaic River Restoration Project*

On behalf of the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE), Kansas City District, CDM Federal Programs Corporation (CDM Smith) traveled to the Lower Passaic River Study Area (LPRSA) on Tuesday, July 16 and Wednesday, July 17, 2019 and provided field technical oversight for the first round of mooring servicing associated with the Physical Water Column Monitoring (PWCM). Five fixed point monitoring locations were serviced at the following river miles (RMs): RM 8.4, RM 10.2, RM 12.0, RM 13.5, and RM 15.8. The locations consist of a surface buoy and bottom mooring, except at RM 15.8, which is shallow and only has a surface buoy. Surface buoys have a YSI sonde mounted to collect conductivity, turbidity, and temperature data. The bottom moorings house a YSI sonde collecting the same parameters as well as an acoustic doppler current profiler (ADCP) to measure flow velocity. Field activities included cleaning the moorings, downloading the data, confirming equipment functionality, and redeployment. In addition, a vertical YSI profile was collected at each location, from river surface to bottom. Field activities were conducted by Ocean Surveys, Inc. (OSI) and AECOM on behalf of the Cooperating Parties Group (CPG). Anchor QEA provided field support on behalf of the CPG.

The fixed point monitoring locations are presented in Figure 1 (note this figure is from the CPG's PWCM Quality Assurance Project Plan (QAPP)). Oversight was conducted in accordance with CDM Smith's Final QAPP for PWCM, dated August 13, 2019. Photographs of field activities are presented in Attachment 1. A copy of the field logbook notes is provided in Attachment 2.

Summary of Tuesday, July 16, 2019 Field Activities

Personnel in Attendance

Alex Warzinski – CDM Smith
Ken Cadmus – OSI
Alexandra Allen – OSI
Steve Howe – AECOM
Mike Tatarelli – AECOM
Chris Yates – Anchor QEA

All personnel met at the 1 Madison Road boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with a winch and the tools for servicing. Anchor QEA and CDM Smith rode in a separate boat for observation and oversight.

Both crews mobilized to RM 13.5. OSI began by collecting a vertical YSI profile at RM 13.5. OSI then began servicing the RM 13.5 buoy-mounted YSI. The YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good (here and elsewhere in this oversight summary report, a good comparison means that measurements from the deployed YSI did not show obvious data quality issues relative to the calibrated boat YSI), so the YSI was redeployed.

The RM 13.5 bottom mooring locator buoy was released and the mooring was retrieved. The bottom-mounted YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good. The ADCP was removed, cleaned, had its data downloaded, and its four sensors were confirmed to be functional. Both the ADCP and YSI were remounted, the locator buoy was reset, and a backup locator beacon was attached to the mooring. The mooring was then lowered back to its original position using the global positioning system (GPS) located above the winch arm. A second vertical YSI profile was collected at RM 13.5 to bracket the data.

Both crews mobilized to RM 8.4. OSI began by collecting a vertical YSI profile at RM 8.4. OSI then began servicing the RM 8.4 buoy-mounted YSI. The YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good, so the YSI was redeployed.

The RM 8.4 bottom mooring locator buoy was released and the mooring was retrieved. The bottom-mounted YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good. The ADCP was removed, cleaned, had its data downloaded, and its four sensors were confirmed to be functional. Both the ADCP and YSI were remounted, the locator buoy was reset, and a backup locator beacon was attached to the

mooring. The mooring was then lowered back to its original position using the GPS located above the winch arm. A second vertical YSI profile was collected at RM 8.4 to bracket the data.

Both crews mobilized to RM 15.8. OSI began by collecting a vertical YSI profile at RM 15.8. OSI then began servicing the RM 15.8 buoy-mounted YSI. The YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good, so the YSI was redeployed. A second vertical YSI profile was collected at RM 15.8 to bracket the data.

All personnel returned to the 1 Madison Road boat dock, secured the boats and equipment, and departed the site.

Summary of Wednesday, July 17, 2019 Field Activities

Personnel in Attendance

Alex Warzinski – CDM Smith
Ken Cadmus – OSI
Alexandra Allen – OSI
Steve Howe – AECOM
Chris Yates – Anchor QEA

All personnel met at the 1 Madison Road boat dock in Rutherford, New Jersey. OSI and AECOM rode in OSI's boat, which was equipped with a winch and the tools for servicing. Anchor QEA and CDM Smith rode in a separate boat for observation and oversight.

Both crews mobilized to RM 12.0. OSI began by collecting a vertical YSI profile at RM 12.0. OSI then began servicing the RM 12.0 buoy-mounted YSI. The YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good, so the YSI was redeployed.

The RM 12.0 bottom mooring locator buoy was released and the mooring was retrieved. The bottom-mounted YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. During preliminary review of the data stored by the bottom-mounted YSI, the turbidity appeared abnormally elevated (around 60 nephelometric turbidity units). Even though the YSI comparison with the calibrated boat YSI was good during the servicing event, the turbidity sensor of the bottom-mounted YSI was removed, replaced, recalibrated, and compared again against the boat YSI (the comparison was good). The ADCP was removed, cleaned, had its data downloaded, and its four sensors were confirmed to be functional. Both the ADCP and YSI were remounted, the locator buoy was reset, and a backup locator beacon was attached to the mooring. The

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mooring was then lowered back to its original position using the GPS located above the winch arm. A second vertical YSI profile was collected at RM 12.0 to bracket the data.

Both crews mobilized to RM 10.2. OSI began by collecting a vertical YSI profile at RM 10.2. OSI then began servicing the RM 10.2 buoy-mounted YSI. The YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good, so the YSI was redeployed.

The RM 10.2 bottom mooring locator buoy was released and the mooring was retrieved. The bottom-mounted YSI was removed and cleaned, had its data downloaded, had its wiper confirmed functional, and was compared against the calibrated boat YSI. The comparison was good. The ADCP was removed, cleaned, had its data downloaded, and its four sensors were confirmed to be functional. Both the ADCP and YSI were remounted, the locator buoy was reset, and a backup locator beacon was attached to the mooring. The mooring was then lowered back to its original position using the GPS located above the winch arm. A second vertical YSI profile was collected at RM 10.2 to bracket the data.

All personnel returned to the 1 Madison Road boat dock, secured the boats and equipment, and departed the site. Boats were scheduled for removal on the morning of Thursday, July 18, 2019.

Figure 1

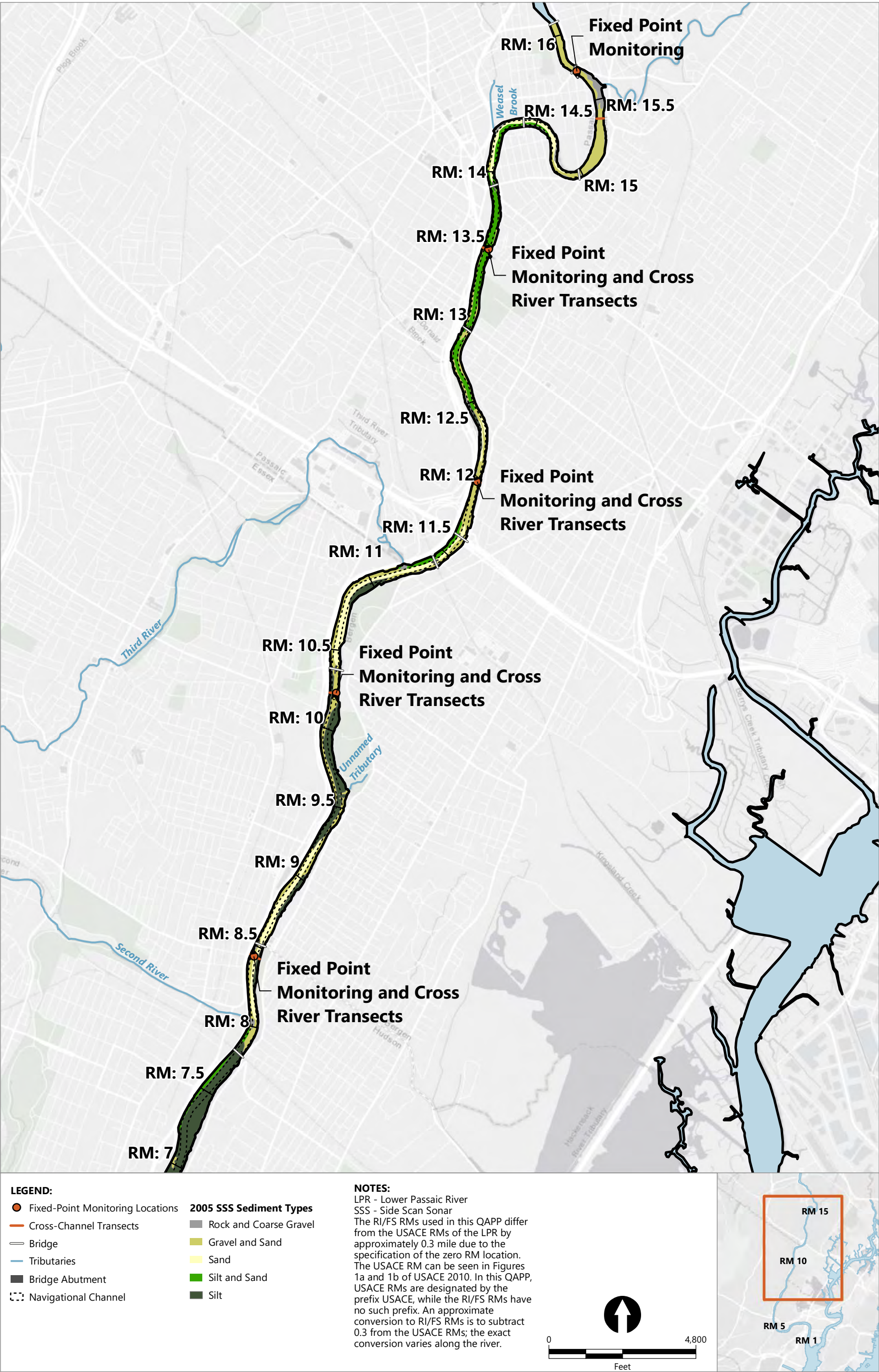


Figure 1
Current Conditions Monitoring Locations
Field Sampling Plan Addendum
Current Conditions Monitoring Program - Physical Water Column Monitoring
Lower Passaic River Restoration Project

Attachment 1

Photographs of Field Activities



Photograph 1: Boat ramp, OSI boat, and Anchor QEA boat at 1 Madison Road, Rutherford, New Jersey dock.

7/16/2019



Photograph 2: Boat YSI sonde for vertical profiles and comparison with river sondes.

7/16/2019



Photograph 3: RM 13.5 buoy.

7/16/2019



Photograph 4: Vertical profile collected at RM 13.5.

7/16/2019



Photograph 4: RM 13.5 buoy retrieval and YSI cleaning.

7/16/2019



Photograph 5: RM 13.5 bottom mooring locator buoy released.

7/16/2019



Photograph 6: RM 13.5 bottom mooring raised and cleaned.

7/16/2019



Photograph 7: RM 13.5 bottom YSI removed and cleaned.

7/16/2019



Photograph 8: RM 13.5 bottom ADCP removed and cleaned and bottom YSI compared against boat YSI.

7/16/2019



Photograph 9: Backup locator beacon attached to RM 13.5 mooring.

7/16/2019



Photograph 10: RM 13.5 bottom mooring redeployed.

7/16/2019



Photograph 11: RM 8.4 buoy.

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Photograph 12: RM 8.4 buoy retrieved and YSI removed and cleaned.

7/16/2019



Photograph 13: RM 8.4 bottom mooring locator buoy released.

7/16/2019



Photograph 14: RM 8.4 bottom mooring retrieved.

7/16/2019



Photograph 15: RM 8.4 bottom mooring redeployed.

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Photograph 16: RM 15.8 buoy.

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Photograph 17: RM 15.8 YSI removed and cleaned.

7/16/2019



Photograph 18: RM 12.0 buoy.

7/17/2019



Photograph 19: RM 12.0 vertical profile collected.

7/17/2019



Photograph 20: RM 12.0 buoy retrieved.

7/17/2019



Photograph 21: RM 12.0 buoy YSI removed and cleaned.

7/17/2019



Photograph 22: RM 12.0 bottom mooring retrieved and cleaned.

7/17/2019



Photograph 23: RM 12.0 ADCP removed and cleaned.

7/17/2019



Photograph 24: RM 12.0 bottom YSI removed and cleaned.

7/17/2019



Photograph 25: RM 12.0 bottom YSI compared against boat YSI.

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Photograph 26: RM 12.0 bottom mooring redeployed.

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Photograph 27: RM 10.2 vertical profile collected.

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Photograph 28: RM 10.2 YSI Bluetooth turned on for data connection.

7/17/2019



Photograph 29: RM 10.2 bottom mooring retrieved.

7/17/2019



Photograph 30: RM 10.2 bottom mooring cleaned.

7/17/2019



Photograph 31: RM 10.2 bottom mooring redeployed.

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Attachment 2

Field Logbook

AFW

Not used

0730 Meet @ 1 Madison Dock
 Ken Cadmus (OSI), Alexandra Allen (OSI),
 Chris Yates (Anchor Q&A)
 Mike Tattorelli & Steve Howe
 (AECOM)

Brief introduction to work plan for
 the day.

Plan to be in Anchor Q&A boat
 w/ Chris.

0800 Steve leads safety briefing
 focused on boat safety and hoist
 stories today are clear and a
 high of around 90°F is expected
 later today.

Planning to collect a vertical profile
 w/ YSI. Alexandra (OSI) had
 performed 2-point calibration on the
 YSI earlier. YSI will collect on 1/2 sec
 interval.

825 YSI test in bucket of Passaic
 River water by dock.

835 Leaving dock for first location @ RM 13.5

845 collecting vertical transect w/ YSI @ RM 13.5

(AFW)

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Location Rutherford, NJ Date 7/16/19

Project / Client Lower Passaic River / USAIE

Diamond Alkali OUY

0850 Preparing to hoist RM 13.5 fixed monitoring point buoy
 Top YSI being cleaned/scrubbed w/ Passaic River water to clear sensors
 Sensor is relatively clean. Data is downloading successfully.

The vertical YSI transect collected @ 845 included chlorophyll *a* ~~sampling~~ ^{APW} screening on the probe.
 That screening will be included in the vertical transects collected during servicing events as well as during sampling.

0910 Comparing the RM 13.5 sonde w/ the calibrated boat sonde (in bucket of Passaic River water).
 Comparability is good, so the YSI will be placed again.

0930 YSI sonde redeployed and buoy released for the ^{ADCP} ~~ADCP~~
 + 2nd (bottom) YSI sonde

0940 mooring hoisted and scrubbed w/ Passaic River water.
 Mooring includes the YSI, ^{ADCP} ~~ADCP~~ + ADCP
 an acoustic releaser for the locating buoy.
~~ADCP~~ 7/16/19

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Diamond Alkali OUY

YSI (bottom, RM 13.5) downloading correctly.
 Comparing YSI w/ boat YSI.
 Comparability is good.

~~1000 Collecting a voltage reading from (APW)~~

1020 ^{ADCP} ~~ADCP~~ collecting voltage reading from ADCP to confirm battery is OK
 started @ 42 v when deployed.

At 41 v today.

Wipers on both RM 13.5 sondes confirmed functional (visual check).

YSI collects instantaneous readings.

ADCP collects over 15 min burst.

Data collection is coordinated so the YSI "ping" corresponds to the 7.5 min mark in the ADCP collection (i.e. the midpoint time for data collection).

1045 Redeploying YSI + ^{ADCP} ~~ADCP~~ with a locator pin attached to mooring (as a backup)

1100 RM 13.5 mooring redeployment complete.

(APW) 7/16/19

- 1120 Mobilizing down to RM ~~8.5~~ ^{AFW} 8.4
- 1200 Retrieving RM ~~8.5~~ ^{AFW} 8.4 buoy + shallow YSI. Collecting vertical transect @ RM ~~8.5~~ ^{AFW} 8.4 buoy.
- 1215 Clearing RM ~~8.5~~ ^{AFW} 8.4 shallow sonde. Comparing RM ~~8.5~~ ^{AFW} 8.4 sonde to calibrated boat sonde. Comparison is good. A preliminary check of turbidity data appears to indicate a tidal component.
- 1230 Redeploying shallow sonde. Confirmed the wiper is functional. Buoy released for RM ~~8.5~~ ^{AFW} 8.4 mooring.
- 1245 Hoisting RM ~~8.5~~ ^{AFW} 8.4 mooring. Clearing with Passaic River water. Bottom YSI removed + cleaned. Bottom YSI being compared against boat YSI and ADCP being removed for clearing. Good comparability of bottom YSI + boat YSI. Reinstalling YSI on mooring. Wiper confirmed functional.
- 1355 Redeploying RM ~~8.5~~ ^{AFW} 8.4 mooring.

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- 1410 Collecting YSI profile @ mooring location. Mobilizing to furthest upstream fixed point mooring location. (RM 15.8)
- 1440 Collecting another vertical YSI transect @ RM 13.5 mooring. ^{AFW}
- 1500 Pulling up RM ~~15.8~~ ^{AFW} 15.8 buoy + YSI sonde for clearing. Compared against boat sonde. Good comparison. Vertical transect collected @ mooring location.
- 1535 Sonde redeployed.
- 1610 Back at dock. Prepping boat for evening.
- 1630 Crew sign out + fit.

AFW

0730 Meet on site @ 1 Madison St dock. Crew today is Ken Cullen + Alexandra Allen (OSI), Chris Yates (Anchor O&A), and Steve Hane + ~~artist~~ ^{APW} Tatarovich (AECOM).

0745 AECOM conducts health + safety briefing focused on heat + storms.

0750 Mobilizing to RM 12.0 mooring.

0805 Collecting vertical transect @ RM 12.0. Retrieving RM 12.0 buoy and clearing YSI with Passaic River water.

Downloading YSI data. Comparing the RM 12.0 YSI with the calibrated boat YSI. Data download + comparison are good. Wiper confirmed functional; YSI redeployed.

0840 Locator buoy released for bottom RM 12.0 mooring. Retrieving bottom RM 12.0 mooring.

Clearing mooring w/ Passaic River water.

Downloading data from YSI + ADCP

ADCP tested functional. Packing locator being attached to mooring. Comparing bottom YSI + boat YSI. The comparison was good w/ the boat YSI, but a ~~pre~~ ^{APW} preliminary check of the data seemed to have

~~APW~~ 7/17/19

(50,00,90 ntu) abnormally high turbidity, so the sande will be replaced (after comparison w/ the boat sande to make sure the replacement sande is collecting comparable data). Comparability between boat sande and replacement sande is good, so the replacement sande will be deployed at the bottom RM 12.0 mooring. Drilling a new mooring hole in the mooring so the YSI sensors can be exposed (the replacement sande is shorter than the one that was originally deployed). Replacement sande wiper didn't initiate as scheduled, so a different replacement is being checked.

1050 Ended up ^{replacing +} recalibrating the turbidity sensor on the original sande. Check against the boat sande was good (again), so the sande will be redeployed.

1100 Redeploying RM 12.0 mooring.

1115 Mobilizing to RM 10.25 ^{APW} mooring (after taking vertical YSI profile @ RM 12.0 ^{APW})

1130 Collecting vertical profile @ RM 10.25 and

~~APW~~ 7/17/19

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retrieving RM 10.25 ^(APD) buoy. Cleaning YSI
w/ Passaic River water + downloading data.
Comparing sonde w/ boat sonde. Downloading
data. Comparability is good. Wiper

Confirmed functional, so sonde being redeployed.
1205 Buoy released. Lifting RM 10.25 ^(APD)
mooring for servicing. Cleaning w/ Passaic
River water. YSI wiper confirmed functional.
Comparing bottom sonde w/ boat sonde +
downloading data. Sonde comparability is
good. ADCP checked for functionality + data
downloaded. YSI + ADCP reinstalled for
deployment.

1320 Redeploying RM 10.25 ^(APD) mooring.

1330 Collecting vertical profile @ RM 10.25 ^(APD)

1400 Back @ Madison Rd. docks. Unloading
equipment and getting boats prepped for
removal tomorrow (con smith won't
be onsite for boat removal).

1445 Alex Warinski offsite.

APD

7/19/19

Location _____ Date _____

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